NAME _____ CLASS _____ DATE _____

12-3 Solving Problems Involving Ratios and Rates

UNIT 4

OBJECTIVE: *Using unit rates to solve real-world problems*

Finding a unit rate can help answer questions about distance or cost.

EXAMPLE 1

A motorist drove 195 miles in 3.5 hours. Assuming a constant speed, find the motorist's speed in miles per hour.

Solution

$$\frac{\text{miles}}{\text{hours}} \rightarrow \frac{195}{3.5}$$ *Divide 195 by 3.5.*

Since $195 \div 3.5 \approx 55.7$, the speed is about 55.7 miles per hour.

EXAMPLE 2

One brand (A) of detergent costs \$4.99 for 50 fluid ounces. A second brand (B) of detergent costs \$6.99 for 64 fluid ounces. Which brand has the lower unit price?

Solution

Brand A: $\frac{\text{dollars}}{\text{fluid ounces}} \rightarrow \frac{4.99}{50}$ **Brand B:** $\frac{\text{dollars}}{\text{fluid ounces}} \rightarrow \frac{6.99}{64}$

The unit price for Brand A is \$0.10 per fluid ounce and the unit price for Brand B is \$0.11 per fluid ounce. Since $0.10 < 0.11$, Brand A has the lower unit price.

Solve each problem.

1. It took a technician 4.5 seconds to pour 270 milliliters of solution into a container. Find the flow rate per second. _____

2. In 2.4 minutes, a small plane descended 900 feet. If the rate of descent is constant, find the rate of descent per minute. _____

Which has the lower unit rate?

3. One brand (X) of fertilizer costs \$12.99 for 10 pounds. A second brand (Y) of fertilizer costs \$26.99 for 25 pounds. _____

4. One brand (K) of vegetable costs \$1.89 for 16 ounces. A second brand (L) of vegetable costs \$0.99 for 10 ounces. _____

5. Motorist R takes 3.2 hours to drive 200 miles. Motorist S takes 4.8 hours to drive 400 miles. _____